



Transportation Sector

SEP Special



BUS FLEETS, LIKE THIS ONE IN PEORIA, ILLINOIS, CREATE CLEAN CITIES ENERGY SAVINGS AND ENVIRONMENTAL IMPROVEMENTS. MASS TRANSIT FLEETS CAN ALSO SERVE AS A HIGHLY VISIBLE REMINDER OF ALTERNATIVE FUEL OPTIONS.

The transportation sector comprises 67% of total U.S. petroleum consumption, and depends on petroleum for nearly 96% of its energy. In 1998 alone, the transportation sector consumed 12 million barrels of petroleum per day. Our nation's dependence on oil imports has created significant economic repercussions over the last 25 years, both in regard to the Federal budget and on the pocket of the average U.S. citizen. The drive to diversify our energy resources will play a large role in the nation's sustainability and security in the 21st century.

Energy consumption by the transportation sector is continuing to increase – in fact, the number of motor vehicles on the road has almost doubled since 1970. The resulting energy and environmental impacts are

problems that plague our urban, suburban, and rural areas. Traffic congestion and noise pollution are on the rise across the country. Emissions pose health risks to our citizens and contribute to environmental damage on land, in the water, and in the air. The consequences of today's transportation choices will continue to be felt by future generations.

In an effort to influence these trends, the Department of Energy's Office of Transportation Technologies (OTT) supports

SEP SPECIAL PROJECTS FUNDING FOR THE TRANSPORTATION SECTOR:

1996	\$2,150,000
1997	\$2,326,000
1998	\$2,655,204
1999	\$3,692,702

total:	\$10.8 million
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several programs which aim to modify the way our nation satisfies its basic transportation needs. Many of these programs focus on the deployment and effective use of progressive transportation technologies, including electric motors, fuel cells, and advanced engines.

Within the transportation sector, SEP Special Projects aim to mitigate both petroleum use and pollution. SEP Special Projects promote the conversion to alternative fuel vehicles (AFVs) by local government and private fleets. SEP Special Projects also support the establishment of a national and regional refueling infrastructure for use by long- and short-haul fleets to ease the transition to AFVs. These activities, coupled with effective dissemination of

information on alternative fuel technologies, are designed to spur the acceptance of AFVs by the general public.

CLEAN CITIES

One of the most successful transportation Special Projects programs is Clean Cities. The Clean Cities Program takes a voluntary approach to AFV development and thrives on strong local initiatives. It offers a flexible approach to the challenge of building alternative fuels markets, providing participants with the option to address problems unique to their cities and fostering partnerships as the mechanism to overcome these problems.

The Northeast region has been especially active in promoting alternative fuel use and



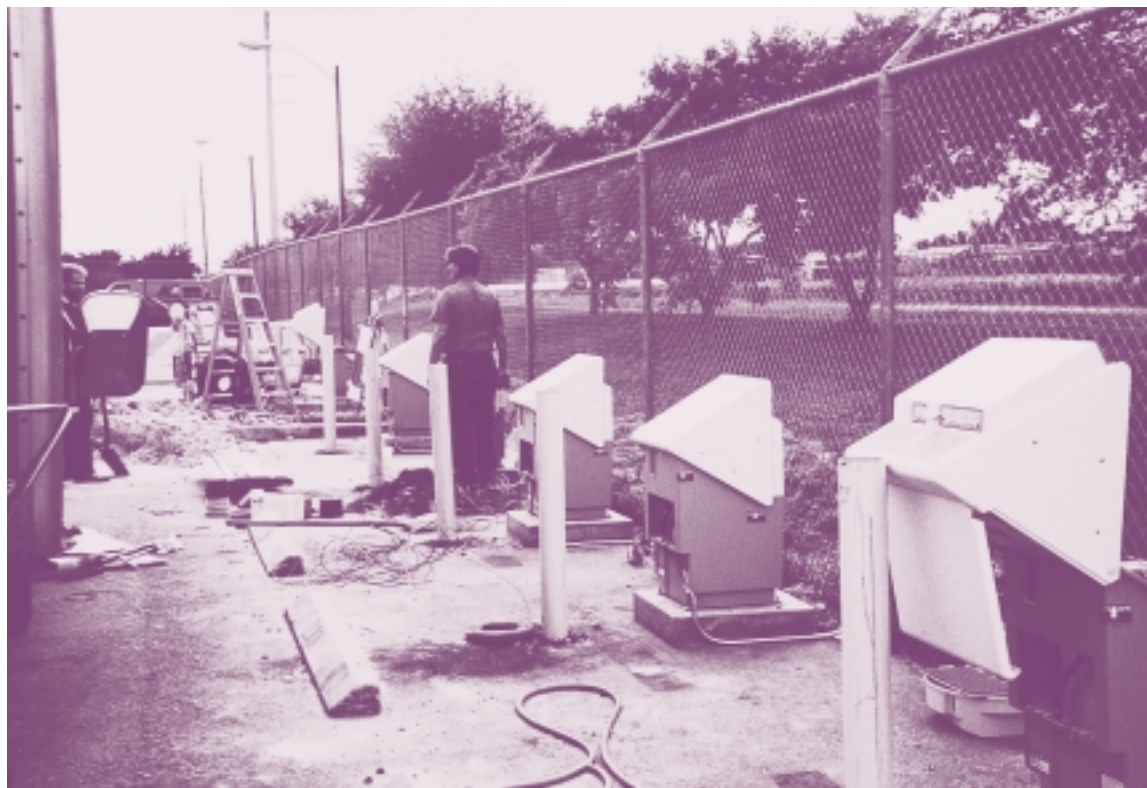
NEW MEXICO PROMOTES ENERGY EFFICIENCY IN THE TRANSPORTATION SECTOR BY PARTICIPATING IN PARTNERSHIPS LIKE CLEAN CITIES, INCREASING THEIR ALTERNATE FUEL FLEET VEHICLES, AND CONTRIBUTING TO THE NATIONWIDE REFUELING INFRASTRUCTURE.





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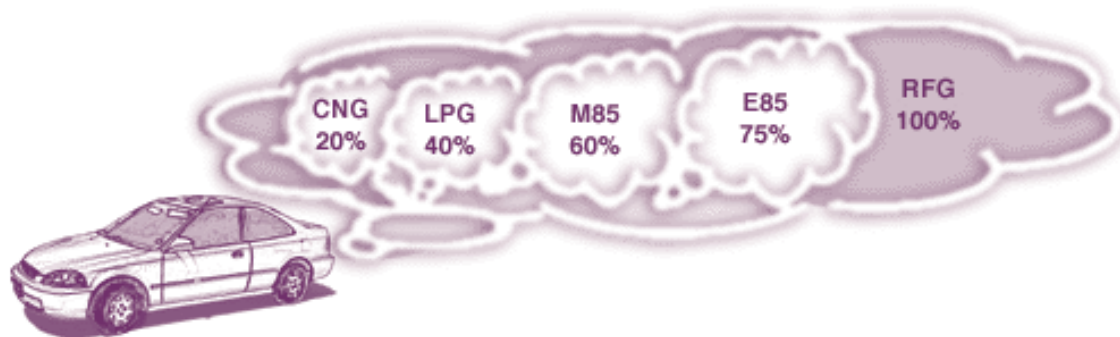
THE CONSTRUCTION OF CONVENIENT REFUELING SITES IS IMPERATIVE TO ENCOURAGE SHORT- AND LONG-HAUL FLEET OWNERS TO CONVERT THEIR VEHICLES TO ALTERNATIVE FUELS.

leveraging funds to support Clean Cities initiatives. The *Capitol Clean Cities Program* in **Connecticut**, in a partnership with local banks, car dealerships, utilities, and State and Federal government, implemented a program which assists State and private fleet owners in financing alternative fuel conversion. In the 1997 fiscal year, the program solicited \$295,000 in private funds to bolster the \$50,000 Federal grant. In 1998, the program leveraged another \$150,000 in private funds, in tandem with another \$125,000 Special Projects grant. The program's impact extends well beyond leveraging successes. For example, the Taxi Fleet Program with Yellow Cab Company of Bloomfield, Connecticut, was a 1999 Clean Cities National Partner Award winner.

The success of this program was evidenced in the cab drivers' willingness to drive the vehicles, an increase in tips from riders, and the lower operating costs due to both lower



AS PART OF A CONNECTICUT SPECIAL PROJECTS GRANT, THE **YELLOW CAB COMPANY OF BLOOMFIELD** CONVERTED THEIR FLEETS TO **CNG** WITH GREAT FANFARE. THE SUCCESSFUL PROGRAM BECAME A 1999 **CLEAN CITIES NATIONAL PARTNER AWARD WINNER**.



THE DIAGRAM ABOVE SHOWS THE PERCENTAGE OF COMBINED CARBON MONOXIDE AND NITROGEN OXIDE EMISSIONS FOR EACH ALTERNATIVE FUEL AS COMPARED TO REFORMULATED GASOLINE (RFG). FOR EXAMPLE, THE EMISSIONS FROM CNG VEHICLES ARE ESTIMATED TO BE 20%, COMPARED TO 100% EMISSIONS FROM VEHICLES USING RFG. CNG VEHICLES DEMONSTRATE AN 80% REDUCTION IN OZONE-FORMING EMISSIONS.

fuel and maintenance costs. The project includes a Mobile Emissions Credit Reduction program where alternative fuel fleet owners receive refueling “credits” set by the amount of reduction in air pollution from their fleet’s emissions.

Another Clean Cities partner which received nationwide attention was the Tulsa (Oklahoma) Public School System, which also received a 1999 Clean Cities National Partner Award. As a member of the *Tulsa Area Clean Cities Coalition*, the system expanded its fleet of alternative fuel vehicles with funding through SEP Special Projects. As the largest district in the State, Tulsa currently owns a fleet of 287 school buses, 147 of which are AFVs. The result of this conversion is impressive: the district saves a substantial \$35,574 per year in fuel costs. School bus conversions can yield exceptional far-reaching results; not only do the fleets offer energy savings, but their high visibility can educate the public about the advantages of alternative fuel use.

The Washington, D.C. metropolitan area has the second worst traffic congestion in the nation and is one of the fastest growing areas in the country. To combat the problems arising from this rapid growth, the *Metro Baltimore-Washington, D.C. Clean Cities Program* was established to cultivate the acceptance of alternative fuels. This Clean Cities program leveraged \$850,000 in private funds to accompany the \$110,000 Special Projects grant. The program provides rebates to private and local government fleets for the purchase of, or conversion to, compressed natural gas (CNG) vehicles. The program offers \$4,000 towards dedicated CNG vehicles and \$2,000 toward bi-fueled vehicles. The alternative fuel infrastructure is also being expanded to include a CNG refueling station in Columbia, Maryland, which is the halfway point between the two cities.

Similarly, rapid growth in Phoenix, Arizona, has resulted in the area being designated “serious” under the National Ambient Air

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Quality Standard for ozone, carbon dioxide, and other hazardous pollutants. The Maricopa Association of Governments is dedicated to reducing area pollution through the use of alternative fuel vehicles. To applaud the effort, the Association received an award at the 1999 National Clean Cities Meeting for achieving the largest increase in alternative fuel vehicles in the previous year – 1,800. Additionally, the Association partnered with *Tucson Clean Cities* to add electric refueling sites between the two cities.

Many cities are exploring new opportunities to expand AFV use and involve the public in their endeavors. The *Greater Philadelphia Clean Cities Program (Pennsylvania)* has initiated a drive for AFV shuttle operations, specifically at Philadelphia International Airport, local hotels, and universities. The *Bay Area Clean Cities Program, (California)* along with General Motors, has installed a network of forty electric vehicle recharging stations for use by the general public at various sites around the San

Francisco area, including airports, public parking garages, malls, parks, and restaurants. This \$100,000 Federal grant raised more than twice its total (\$225,000) in leveraged funds. **North Carolina** and **South Carolina** collaborated to increase the public awareness of AFVs through *The Electrical Vehicle Education Information Forum Curriculum Development Project*. This collaboration provided non-technical forums for the general public on electrical vehicles and their operation in order to make their use a viable option.

INFRASTRUCTURE

The decline of the nation's rail transport industry is partially due to a rapid increase in the use of heavy-duty diesel trucks to transport the nation's goods. These pollutant- and energy-intensive vehicles are a primary target for alternative fuel usage. One of the most critical aspects in the deployment of alternative fuels is the establishment of a refueling infrastructure to support short- and long-haul fleets.

THIS HEAVY-DUTY TRUCK UTILIZES A NETWORK OF NATURAL GAS STATIONS THROUGHOUT CALIFORNIA.



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WITH THE RISE OF COMMERCIAL ALTERNATIVE FUEL USAGE AND ON-GOING NATIONWIDE EXPANSION OF REFUELING CORRIDORS, THE GENERAL PUBLIC BECOMES MORE OPEN TO PERSONAL ALTERNATIVE FUEL USE.

Many regions have instituted Clean Corridor Projects, or enhanced their Clean Cities programs, to include the planning of new station sites and to link current refueling sites across the region in a manner to support commercial fleet industries and the general public. It has been estimated that the *Interstate Clean Transportation Corridor*, which traces from **California** through **Nevada** and **Utah**, will displace 4.7 million gallons of petroleum and mitigate more than 286 tons of pollution annually.

Another demonstration of integrated planning is the *LNG/CNG Fueling Station Project* in Las Cruces, New Mexico. This station is located near the intersection of I-10 and I-25, along the East-West Corridor

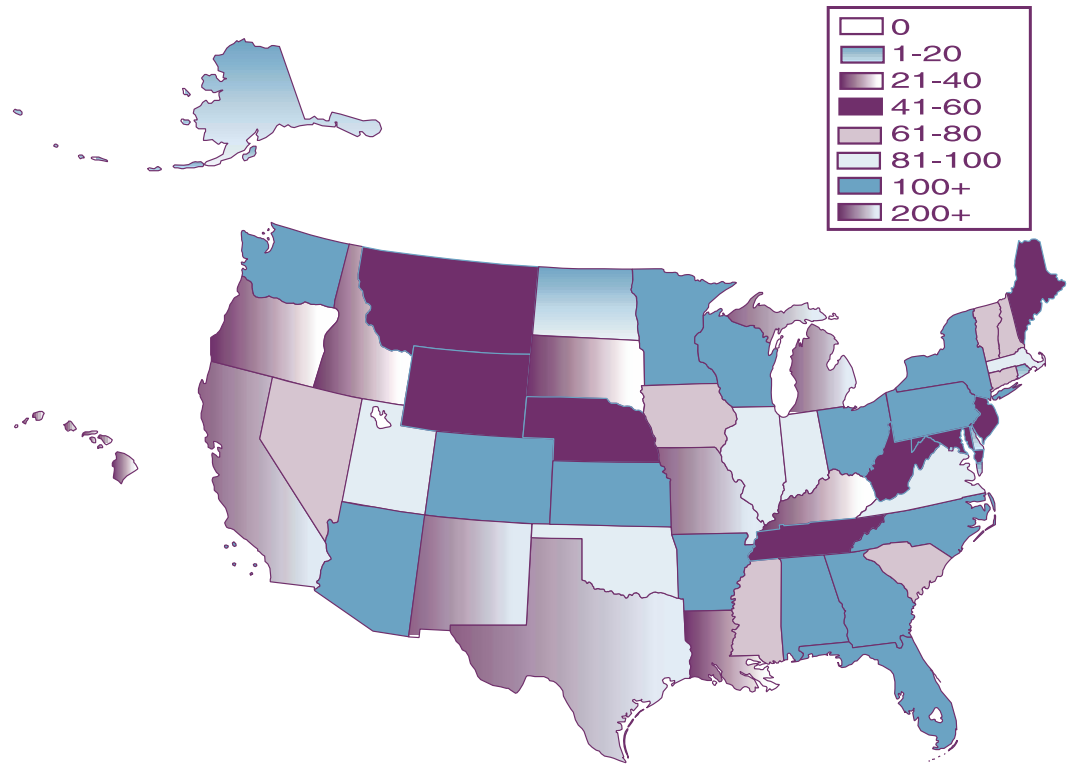
from Florida to California. An outstanding leveraging example, the project secured \$760,000 in private funds and \$150,000 in Special Project funds.

A *Clean Crossroads* partnership comprised of **Kentucky**, **Indiana**, and **Ohio** focused on the creation of a practical infrastructure to serve the tri-State area. The partners tailored efforts to meet the unique needs of each State, while collaborating to develop an effective refueling infrastructure. Indiana installed a natural gas fueling station at the juncture of I-64 and U.S. Highway 41, which are major thoroughfares used by the public and industry alike. Ohio converted several government fleets, including those of the city of Cincinnati, where three underground,

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U.S. MAP SHOWING REFUELING SITE COUNTS FOR ALL ALTERNATIVE FUEL TYPES (CNG, M85, E85, LPG, LNG, ELECTRIC)

10,000-gallon E-85 tanks were installed. In addition, Kentucky converted service vehicles at Louisville Regional Airport and installed three E-85 fueling stations.

The Clean Cities Program recognizes collaboration is essential in creating an effective infrastructure. Three **Colorado** Clean Cities (Colorado Springs, Denver/Boulder, Weld/Larimer/Rocky Mountain National Park) joined forces to create the *Colorado Front Range Corridor*. These cities realized that clean air was more than a local issue,

and that their air quality goals could be more efficiently met through a coordinated effort. The Corridor integrates the three Clean Cities and the adjacent communities along I-25. The program has created a map of fueling stations, a quarterly newsletter, promotional material, and a kiosk at Rocky Mountain National Park, as well as, efficiency surveys and training for fleet managers.

While many corridor programs rely on collaboration between Clean Cities or States for effectiveness, the sites established

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in the northeast corridor were organized by both the Philadelphia Regional Office and the Boston Regional Office, in conjunction with several Clean Cities. The *Northeast Clean Corridor Project* connects **Washington, D.C.** to Boston, **Massachusetts**, with Philadelphia, **Pennsylvania**, being the central point.

States across the nation have realized the multiple benefits of establishing alternative

fuel refueling sites. The Chicago, **Illinois**, area has the largest density of fleet vehicles in the nation. This necessitates the support of a broad ethanol (E-85) refueling infrastructure and to date, ten refueling sites have been constructed with the help of Special Projects. The *E-85 Infrastructure Construction and Development Program for the Chicago Area Project* was financed through a \$250,000 Federal grant and \$647,000 in privately-leveraged funds.

Some Clean Cities partnerships are laying the groundwork for a more efficient transportation future. The Austin (**Texas**) Clean Cities Coalition has studied the feasibility of using only alternative fuel vehicles at the new Austin-Bergstrom International Airport and has determined that AFV's are appropriate for most airport uses. Complete AFV adoption looks promising, as parking contractors and some airlines are already designated AFV users. In Salt Lake City, **Utah**, a similar airport project is underway.